2. RESEARCH ORIENTATION AND STATE PLAN

PREVIOUS ARCHÆOLOGICAL research in the region has provided valuable insights into the locations of human activities through time. In some cases, settlement models are so well developed that sites can be predicted with uncanny accuracy, but there is yet much to be learned about human utilization of Sussex County.

THEORETICAL ORIENTATION

This project reflects a cultural materialist theoretical orientation. Cultural materialism refers to the study of the effects of technology and environment on human behavior. Culture is viewed as a form of adaptation to both the natural environment and the social environment that results from the interaction of human individuals and groups (Custer 1986:2; cf. Harris 1968:240-41; Harris 1979).

This theoretical approach is explicitly incorporated into the Delaware management plan for prehistoric archæological resources (Custer 1986:2). The state plan for historic archæological resources (DeCunzo and Catts 1990:8), on the other hand, stresses the need to compare and evaluate interpretations resulting from different theoretical approaches. The plan emphasizes the need to "allow archæologists with different theoretical perspectives to address their own questions through the resource base in Delaware ... ."

A cultural materialist approach is implicit in the development of models which use features of the natural environment (such as soil types or topography) or elements of the cultural environment (such as roads, landings, or farmsteads) to predict the locations of a variety of property types, including prehistoric settlements, cemeteries, and industrial sites.

Working from this theoretical position, local researchers have developed a strategy designed for the efficient identification of both prehistoric and historic sites. The research strategy consists of the identification and application of models that predict the locations of the major historic and prehistoric property types which can be expected within the project area. These property types include both prehistoric settlements and historic tofts and are of particular concern because they can provide information on a wider range of research questions than other properties considered in this study. Such an approach can be considered an empirical test of the positive statements of the models. It should be kept in mind, however, that this does not constitute a formal test of any model.

Consistent with the cultural materialist approach is an approach to sites of the historic period which emphasizes commercial networks, transportation, and settlement patterns. For the interpretation of spatial relationships between places and their regional significance, the insights of geographers are particularly useful (Hodder and Orton 1976).

While prehistoric settlement patterns may smack of central-place theory, historic settlement patterns can be explained almost entirely by application of the central-place paradigm.

A systematic, top-down approach to material culture demands that each element be viewed as part of a system, further divisible into subsystems and, in turn, sub-subsystems.

If one follows this line of reasoning, a house or object in a domestic setting cannot be considered in isolation, but as part of a toft. Each toft, in turn, is part of an agricultural or domestic system that includes production, consumption, disposal, and interaction with governmental systems, all of which in turn are belong to larger regional or national systems.

In more immediate terms, the systems approach demands interdisciplinary, or holistic, survey strategies that are intended to identify all parts of the system, past and

present, buried and visible, built and natural, tangible and intangible, in a single unified cultural landscape.

PREHISTORIC BACKGROUND

People arrived in the Delaware Valley near the end of the last (Wisconsin) glaciation (Kraft 1986:31). Glaciers entrapped so much water that the ocean lay fifty miles east of the present Sandy Hook, New Jersey. As glaciers retreated and the ocean advanced, area ecology changed.

During the twelve millenia before European settlement, Delaware's climate evolved from glacial tundra to temperate hardwood forest. Man's adaptation to the changing climate was marked by gradual cultural evolution. Custer and DeSantis (1986) have provided a useful table that correlates human and climatic change:

TABLE OF PREHISTORIC CHRONOLOGY

Dates	*Environmental Episode*	*Cultural Period*
8080 BC	Late Glacial	Paleo-Indian /Early Archaic
6540 BC	Pre-Boreal/Boreal	
	Atlantic	Middle Archaic
3110 BC	Sub-Boreal	Late Archaic
810 BC	Sub-Atlantic	
		Woodland I
AD 1000		Woodland II
AD 1600		

These environmental changes over the millenia have forced changes in man's subsistence strategies, family structure, and social organization.

HISTORICAL BACKGROUND

Roads and dams defined the geography of inland Delaware from earliest settlement to the present century. In the case of the present project, the road is the dominant historical force in the area.

People settled along the road after it was built in the last decade of the eighteenth century, because it gave them access to markets. As the soil was made arable through drainage, farms were developed.

When the railroad came through, followed by the duPont Highway, the Georgetown area became more and more closely connected to the larger economy. Chicken farming finally brought a measure of agricultural prosperity during the middle of the twentieth century.

Highway-oriented properties, such as filling stations, used car lots, and other commercial sites, have increased with the traffic through the area. Today the project area is largely a strip development of miscellaneous dwelling and commercial properties strung through agricultural and forest lands.

PLANNING CONSIDERATIONS

The Delaware prehistoric cultural resources management plan identifies the project area as a region with medium significant site potential with no development pressure(Custer 1986:206). The project area itself is located in the Mid-Peninsular Drainage Divide Management Unit (Custer 1986:178, 184). In this management unit, our existing data quality is poor to fair. Scattered hunting sites from the Paleo period are the only prehistoric property type that has a high probability. Procurement sites of all periods have a moderate probability of occurring in this management unit, but one should not expect to find base camps of any period

The mid-peninsular drainage divide has been known to archæologists primarily for the Paleo sites found there. Other periods are poorly represented, but one site in the project area, 7S-F-68, has recently yielded material from the Archaic and Woodland periods (LeeDecker et al 1992:188).

The Delaware Comprehensive Historic Preservation Plan (Ames et al. 1989) places the project area in the lower peninsular geographic zone. Scattered European settlement had taken place near the project area by the middle of the seventeenth century, so that all but the earliest of the time periods established by the comprehensive plan are likely to be represented (Ames et al. 1989:37).

EXPECTED PROPERTY TYPES

For the prehistoric period, the only property types expected would be procurement sites, which are characterized by very sparse artifact scatters, limited tool variety, and ephemeral site boundaries.

For the historic period, four property types can be expected. First of these is the agriculctural toft, defined as "a homestead; the site of a house and its outbuildings" in the *Oxford English Dictionary*. In the catalogue of historic property types provided as Appendix C in the Delaware Comprehensive Historic Preservation Plan, the less precise term "plantation and rural farm sites" appears to be roughly equivalent to the toft (Ames et al. 1989:146).

THE TOFT AS A PROPERTY TYPE

Systems-oriented researchers tend to favor the term "toft" to describe a farmstead, because it is construed to refer to all the land, buildings and artifacts related to the homestead, not merely to the random collection of buildings that might happen to survive above ground at the time of a cultural resource survey.

The systems approach to historical archæology, espoused by Stanley South, demands a holistic view of every property in its total context, without regard for boundaries, temporal, spatial, or disciplinary.

In an agricultural holding, the toft is distinguished from the croft, a term which refers to the fields, meadows, woodlots, and other parts of the holding not in immediate use by the homestead. Kenneth Lewis, who used the toft as the sampling unit in his study of the frontier town of Camden, South Carolina, pointed out the importance of considering the toft as a unit of all the physical evidence immediately associated with the household (1977:175).

AGRICULTURAL FIELDS OR CROFTS

A second historic period property type is the agricultural field, one element of the croft and the locus of a particular variety of human activity. In the catalogue of property types for the Agriculture historic context (Ames et al. 1989:141), fields are seen as exemplifying the products of agriculture, specifically fruits and vegetables and textiles. Fields are seen as providing evidence of agricultural practices, particularly the use of soil additives, or "amendments." Not only archæology, but soil science, chemistry, and farm-equipment history resources can be used to interpret the croft.

HIGHWAY-RELATED PROPERTY TYPES

The third expected property type is the highway system elements within the project area.

Abandoned or superseded roadways are potentially significant cultural resources if one seeks to understand past transportation patterns or property boundaries. In the project area, the main road to the south end of Delaware has been routed through at least three different rights-of-way since the time of the American Revolution.

Ancillary to the transportation structures are the properties that developed because of the highway, including driveways, roadside businesses, strip housing developments, and even billboards. This fourth property type is ably defined by the Berger group as an appendix to their study (LeeDecker et al 1992).

EVALUATION CRITERIA

A primary purpose of any Phase I survey is to identify the locations of historic and prehistoric properties. If any historic properties are found, it will be necessary to evaluate them in terms of possible eligibility for listing on the National Register of Historic Places. This evaluation function normally is part of the Phase II evaluation, but Phase I projects commonly make a "first cut" or triage, dividing sites among those that are clearly eligible or ineligible, and those which require further study.

In a group of planning documents for the Route 13 Relief Route corridor studies, Custer and his associates have developed a framework for evaluating both prehistoric and historic sites (Custer, Jehle, Klatka, and Eveleigh 1984:113-129; Custer and Bachman 1986:192-194; Custer, Bachman, and Grettler 1986:178-180). The framework for prehistoric sites can be summarized as follows, in descending order of significance:

1. All unplowed sites, regardless of period of occupation or site type, are of high potential significance.

2. Late Paleo-Indian and Archaic sites which have been plowed, but which are otherwise undisturbed, are of high potential signi-ficance.

3. Plowed base camps of all time periods are considered potentially highly significant.

4. Plowed sites which are not procurement sites and are associated with bay/basin features are potentially of medium significance.

5. Plowed, disturbed, and eroded sites of all types are potentially of low significance.

6. Plowed procurement sites are also potentially of low significance.

Since procurement sites are the only prehistoric property type expected in the project area, evidence for plowing may be taken as constructive evidence that not eligible site is likely to exist.

It is therefor possible to evaluate a locus under these conditions simply by testing for evidence of plowing, without first determining that cultural remains exist.

Criteria for evaluating historic period sites developed in the planning studies cited above apply primarily to toft sites. The characteristics of significant sites are summarized as follows (derived from Custer and Bachman 1986:194):

1. Sites containing well preserved remains are highly significant.

2. Sites which display a range of well-defined activity areas are highly significant.

3. Sites which contain dense deposits of cultural material are highly significant.

4. Sites in which temporally distinct occupation loci can be identified, either as part of a long term occupation of the site or as a single short term occupation, are highly significant.

The Berger group suggested that roadside architectures should be evaluated in terms of all four National Register criteria, depending upon their ability to illustrate aspects of the automobile phenomenon (LeeDecker et al 1992:309-312).

VALUE OF PREDICTIVE MODELS

Predictive models are the surveyor's most reliable tool, for they permit an orderly approach to large areas, and facilitate economical allocation of resources. The Berger survey of the project area employed predictive models, but the present study was a 100% non-exclusive survey of small, well-defined, areas.

Because they are imposed artificially by researchers, survey strategies, by definition, will skew results. Today's site surveyors attempt to minimize subjective errors by using predictive models, random samples, and fixed interval tests. None of these strategies can conclusively demonstrate the absence of sites; nor can they guarantee identification of all sites that exist in a given study area.

Short of 100% excavation, any strategy is nothing but an educated guess, tempered with statistics. However, experience over the last 20 years has shown that the use of an informed strategy is the most effective way to maximize site identification, that is to say, to identify the largest number of sites with the least amount of effort.

The oldest strategy is the predictive model, used intuitively for decades and most recently codified and quantified on the basis of non-exclusive random surveys. Predictive models attempt to identify and quantify factors that help determine site locations, based upon data derived from surveys.

Too often, however, underlying surveys have been either subjective or less than exhaustive, causing models to be skewed. A good predictive model, to be accepted as more or less reliable, must be based entirely upon data that was not generated in a subjective manner.

Such a model has been incorporated into the state management plan for prehistoric resources (Custer 1986).

At the same time, regional surveys in Kent and New Castle Counties have made it possible to quantify some of the relationships between site location and ecological factors (Custer, Bachman, and Grettler 1986; Custer and Bachman 1986).

Since historically most major sites have been identified by means other than random or non-exclusive surveys, it is difficult to justify using models based upon

the whole corpus of survey data in many localities. This difficulty should not exist in the study area, since the Berger study was a non-exclusive survey.

PROJECT AREA PREVIOUS RESEARCH

The highway project has been thoroughly investigated, through the Phase III level, by Louis Berger and Associates, Inc. (LeeDecker et al 1992). The Berger survey was restricted to the right-of-way, but it addressed cultural resources that were immediately adjacent to most of the areas covered by the present study.

All the proposed topsoil storage areas are immediately adjacent to sites that were evaluated by the Berger group.

APPROACH AND METHODS

Survey consisted of field reconnaissance, culminating in field testing. Where fields were available, with good visibility, for walkover survey, this method was used. In other cases, such as lawns, it was necessary to sink shovel test pits.

Since project impact will be confined to the topsoil, there was no need to test for buried features. Shovel test pits were used in the grassed areas to determine if they had been plowed, and if significant quantities of artifacts are present. Where the sites were grassed and in low or moderate probability zones, shovel testing was minimal.

Where appropriate, results obtained from the earlier Berger survey in the adjacent right-of-way were accepted. In particular, it was felt that the Berger evaluations of site probability are a credible basis for decision making. Some of the topsoil storage areas are in places where the Berger group chose not to test at all, on the basis of predictive models.

The Berger group's sites were re-evaluated in order to expand coverage to consider the topsoil storage areas.